

The Pencil of Nature II

Yes, a new question has arisen: what sort of bodies do we wish to have? What sort of bodies is it worth having? In the past, this question was raised by religion, education and ethics only about the soul; now it is raised about the body as well, by medicine, science, economics, politics, and morality.

Bruno Latour

- In 1839, Henry Fox Talbot developed negative photography and thus made possible the reproduction of images in unlimited quantities.
- In 1859, Charles Darwin published his famous work *The Origin of Species*.
- In 1871, he wrote his second important work *The Descent of Man and Selection in Relation to Sex*, in which he elaborated on his findings and insights about human beings.¹
- In 1882, Nietzsche published the book *The Gay Science* in which he announced “the greatest moment in the history of the modern age,” and wrote: “God is dead.”

The confrontation with Darwin's discoveries did not remain a matter for biologists and zoologists for very long, and soon after they were published, they took hold of the consciousness of the general public. One reason for this was surely their metaphysical implications, but another was most certainly the shock and dismay in reaction to them perceived very directly throughout all classes of society. The result was the full-blown hype of biology. (The obvious contemporary analogy would be the heated controversies surrounding the theories of evolutionary psychologists and the sociobiologists.)

The zoologist Thomas Henry Huxley (Darwin's contemporary and grandfather of Aldous Huxley) was a spellbinding public speaker who not only did yeoman service in advancing the acceptance of Darwinism in English scientific circles, but also promoted broad popular acquaintance with the man's ideas by presenting numerous lectures on these scientific theories for members of the working class, a practice highly unusual in that day and age. “The hall had never been as full as it was yesterday evening. By next Friday, I shall have them all convinced that they are monkeys,” he himself wrote about the reception accorded to his addresses. Immediately, a contemporary version of the old theological conflict of human free will versus Divine Providence flared up along the battle lines separating the determinists and the environmentalists, and escalated into the various eugenics concepts developed in the early 20th century.

The fateful ideologies as put forth by Galton, Haeckel, Davenport and many others are very closely connected to the social upheavals of the Industrial Revolution. The economic successes of automation made the principles of industrial organization socially acceptable explanations for the development of human beings and society as well, and the social problems caused by the Industrial Revolution likewise provided welcome opportunities to espouse abstruse legitimization theories.

It was above all through the use of statistics and mathematics that attempts were made to substantiate these various different racial theories. The apparent indisputability of numbers and bell-shaped gaussian curves provided the argumentational scaffolding for turn-of-the-century Social Darwinists.²

- Ernst Haeckel was one of the driving forces behind the introduction of Darwinism in Germany, but he went on make out of this a purportedly scientific framework in support of an openly nationalistic racism that was instrumental in paving the way for the Holocaust.
- Darwin's cousin Francis Galton, who coined the term eugenics (1883), introduced

dactyloscopy (fingerprinting) in the police's repertoire of detection methods, and was even raised to the peerage in 1909 for his eugenics research, also established a connection between the concepts of race and nation, and was convinced of the necessity of improving the British people since only the fittest nations would survive.

- In 1877, American Richard Dugdale published his study of the Jukes family, in which he traced their family tree full of criminals and social drop-outs back over seven generations until he believed he had come upon the "genetically disadvantaged couple" that had been behind it all. He appended to this investigation an accounting that had been done by the American Eugenics Society, according to which the damages attributable to the Jukes' offspring suffered by the State of New York up to the year 1916 amounted to over \$2 million, whereas timely sterilization of the original couple would have cost only \$150.

But not all evolutionary theoreticians exhibited such racist contempt for mankind. The English biologist Julian Huxley (the brother of Aldous Huxley) was a master—just as his grandfather had been—of expounding upon his theories in a way that made them accessible to the man on the street. Alarmed by the course of events in Germany, he utilized his full powers of persuasion to combat biologically legitimated racism. In a book he published in 1935, he employed splendid irony to describe the design of a truly classic Aryan type: "As blond as Hitler, as dolichocephalic (having a relatively long head) as Rosenberg, as tall as Goebbels, as slim as Göring and as masculine as Streicher."

Nevertheless, J. Huxley also shared with scientists like J. B. S. Haldane, Hermann Muller and Herbert Brewer (as well as George Bernard Shaw) a tremendous enthusiasm for "eutelegensis," a concept for artificial insemination using eugenically selected human material—a concept that obviously exerted an influence on his brother Aldous Huxley's novel *Brave New World*.

What these ideologically highly diverse theories had in common was an approach that sought to implement constraints to regiment human reproduction, or to liberate it from the complicated chaos of sexual intercourse—to separate sex and procreation.

- In 1885, Karl Pearson, the fanatical heir of Galton's theories, founded the Men and Women's Club, where relations between the two genders were discussed openly, and members confronted issues like free love and sexual experiments with the aim of implementing in actual practice the scientific control over human reproduction.
- Haeckel founded the Monistenbund, whose members had to pledge to enter into a racially pure marriage. Beginning in 1931, it was also forbidden for members of the SS to be married to or to engage in sexual relations with a non-Aryan.
- In order to promote the birth of Aryan children, Hitler endowed the Mother's Cross in bronze (for four children), in silver (for six) and in gold (for eight). Men whose wives gave up their careers in order to remain at home could obtain generous mortgages, whereby the amount that had to be repaid was reduced by 25% for each child the couple produced.

In this connection, mention must also be made of the forced sterilizations that were common practice in many nations of the world long after the end of World War II, as well as the ban on racially mixed marriages. For example, in 1942, it was still forbidden for "Whites" and "Negroes" to marry in 30 states of the US.

It almost seems as if hedonism, promiscuity and power of orgiastic emotions are all that can be put up in opposition to eugenic ideologies. Could it, then, turn out that the Fun Society is the only reliable bastion to counter neo-eugenic ideologies? It is perhaps more likely that a society in which consumers who easily succumb to seduction are considered its most important economic resource will achieve its goal in catering to our inadequacy complexes rather than in eradicating them.

Genetic engineering, and particularly modern human genetics, has become the central provocation of our age.

The possibilities it dangles before our eyes have set off an ethical shockwave, which is juxtaposed to a social discourse that is sufficiently radical only to a certain extent. Polarized between resistance and affirmation, the decisive questions regarding ideological effects and consequences are brought up only in exceptional cases, and the landmines of secondary research in evolutionary biology—which guarantee monster ratings among mass media audiences—are ripping deep mental craters into the fragile shell of constructive considerations. And still the most conspicuous thing about this is the almost complete absence of philosophy.

If the ecology debate of the 20th century was devoted to concerns about how we will be able to preserve the planet, then the question that arises for the 21st century to face is how we might go about preserving the human being—or, formulated more precisely, what aspects of him or her we should or would preserve.

The effects of the life science techniques now in everyday practice are so far-reaching that we are incapable of integrating them in simple additive fashion into our society's operative systems of values and norms. They will cause definitively transforming and substituting powers to unfold.

Here, attention turns unavoidably to the age-old human quest to overcome man's inherent limitations, both as a type of transference applying the principle of progress to humanity itself, and as a search for meaning and insight into the spiritual depths of existence—and the idea of the new man, the *Übermensch*, that has always been associated with it.

The concept of overcoming inadequacies specific to a particular individual as well as to the species as a whole is a constant of the history of our civilization—whether by means of religious humility, self-denial and sacrifice, whether by means of the categorical imperative, enlightenment and humanism, the Futurists' visions of the world to come—which ultimately drifted off to blend into the fascist thinking of that day and age—the socialist, Marxist faith in renewal, or the post-human cyborg visions of the Computer Age.

In alternating fashion, two approaches in particular are being put forward—the one according to which the perfect human being would already orient himself if society were modified (in accordance with the laws of evolution), and the one according to which the modifications to the individual human being would have to set in directly. Driven by the promises of biotechnology, the latter is back in favor at the moment.

Thus, self-discovery instead of self-realization is also the current popular-culture version of this game, and, in light the matter-of-fact way we turn our bodies over to the care of plastic surgeons, it seems that life science and life style have more than just linguistic similarity in common.

Communications technologies and biotechnologies are the crucial tools recrafting our bodies. These tools embody and enforce new social relations for women world-wide.

Donna Haraway, 1995

The success of human civilization is based upon the very simple principle of transforming nature (our own as well as the one that surrounds us) into art. This is a process whose first significant step was the elaboration of unprecedented capabilities in communication, information storage, and self-reflection (language), and which, in subsequent steps, led to the adaptation of living spaces to accommodate human life, to the exploitation of raw materials, to chemical syntheses of plastics and the development

of the atom bomb, and on to the artificial intelligence and digital networks of our Computer Age.

Thus, what started out as an anomaly of nature (because nothing of the sort had ever occurred before) returns to its place of origin, to the fundamentals of human life.

Civilization outfitted with molecular biology sets out to reconstruct life in accordance with human calculation and discretion, and is now set to liberate the process of our own origination and reproduction from the purported inadequacies of biological haphazard. With human management of evolution, order will finally be brought to the chaos of nature.

Although the calculated configuration of life on the basis of genetic codes is still far off in the future, there already exist two practicable genetic engineering methods that will directly impact human procreation: germ-line therapy, including genetic manipulation that is effective even as far as the material passed on to progeny, and pre-implantation diagnostics, which provides an indication of defects and dispositions, and thus constitutes the rudiments of genetic selection. The current legal/legislative consensus with regard to both of these cases is still rather inchoate; nevertheless, it may be assumed that, as a result of medical prospects, there will soon be a majority of society in favor of employing these methods. And it may likewise be presumed that this will occur before the corresponding ethical debate and process of consensus formation has taken place.³

As this attains a high-profile presence in the spotlight of mass-media coverage, the borders between responsible research and the race to make a killing in the business of life become blurred, and nameless fear of ethical disaster is commingled with shamelessly trivial curiosity and sensational anxiety-lust for that impending moment when the photo of a proud and happy mother holding the first cloned child in her arms is transmitted around the world.

The possibility of selectively determining the genetic constitution of embryos cannot be considered without taking a side glance at current patent laws and licensing practices in the biotech business. The logical upshot would probably be a “terminator gene” in our germ line that forces us to re-license each new instance of reproduction ...

The consideration of cultural and social perspectives of modern reproductive technologies and what we can expect from them in the future calls for a debate of the social and biological stipulation of gender differences, and the respective claims to power derived from them. This must be carried on with particular attention to biological, gender-specific and, ultimately, racist arguments—Genes have no gender!

The question is: who is the future Disney? The answer: he'll be, among other things, a molecular biologist ...

Vilém Flusser, 1988

Artistic works having to do with genetic engineering remain rather in a distanced, commentatorial posture vis-à-vis the issues, and still seldom deal explicitly with its methods, tools and materials. Where they do succeed in doing this, they go beyond the context of scientific-art, which was completely reshaped at the end of the 20th century, and emerge in a field of artistic practice that perhaps for the first time can be said to deserve being characterized as the “the pencil of nature.”⁴

In the investigation and restructuring of the contexts of art and nature, this approach enables social relevance to emerge and unfold, but also runs the danger of being reduced to the position of moral conscience. Thus, what is called for is a revaluation of the constellation “art and science,” in which the Antigonal stereotypes of compensa-

tion and opposition on one hand, and realignment and apologia on the other, are dispensed with.

Not restricted to interpretation, but rather directly accessing technical-systemic as well as social-structural aspects, 21st-century artists are constantly searching for new methods and tools, and analyzing the technical-scientific territories opened up in order to discover new materials and forms of expression for their artistic work.

The extent to which the act of turning to modern genetic engineering and biotechnology has changed the entire context in which art is created and mediated can be gleaned from the following description by Joe Davis and Katie Egan of the projects they prepared for Linz:

*In order to maintain a supply of many different organisms Katie Egan and I have learned to maintain a wide variety of wild protist cultures. We call this collection of microbial cultures 'the farm.' 'The farm' now includes many species of ciliates, nematodes, euplotes, rotifers (*bdellooids*), motile algae and other tiny invertebrates. As we are artists still, with little or no ambition to become scientific taxonomists, many of our organisms are referred to in lab by our own names for them such as 'green scudlers,' 'red weirdos,' and 'scary finbacks.' Because many of these organisms originated as 'wild' organisms it is possible that some of them have not yet been scientifically classified anyway. We also are fortunate to have available a variety of typical laboratory microorganisms in reasonably pure culture including e-coli, bacillus, pseudomonas, and others.*

The experience of 'the farm' has itself spurred us on to other work. We are for instance now pursuing a microfabrication project that will allow us to 'go fishing' for microbes with equipment that is basically analogous to an anglers 'rod and reel.'

How exciting and challenging this is for the world of the creation and mediation of art, and particularly for this year's Ars Electronica, surely requires no further elaboration.

- 1 Whereas Darwin's insights into "the origin of species" were the result of his precise observation of nature, the "survival of the fittest," certainly the most fateful interpretation derived from his findings, ought rather to be interpreted as a result of the man's ideological background, as R. Lewontin has shown in his book *Biology as Ideology*. "Yet Darwin himself was conscious of the source of his ideas about the struggle for existence. He claimed that the idea for evolution by natural selection occurred to him after reading the famous *Essay on Population* by Thomas Malthus, a late-eighteenth-century parson and economist. The essay was an argument against the old English Poor Law, which Malthus thought too liberal, and in favor of much stricter control of the poor so they would not breed and create social unrest."
- 2 Impressive descriptions of the consequences of Darwin's publications can be found in *The Evolution of Racism: Human Differences and the Use and Abuse of Science* by Pat Shipman, 1994, as well as in Daniel Kevles' 1985 book "In the Name of Eugenics."
- 3 The media reported recently about an opinion poll in which 19% of pregnant women surveyed indicated that they would consider an abortion if it were established that their child had a disposition toward obesity.
- 4 Around 1840, William Henry Fox Talbot wrote an essay about his scientific work in which he used the formulation "the pencil of nature" in order to express his conclusion that the images produced by the optical exposure of a chemical emulsion to light were not the work of an artist but rather the creations of nature itself. He was unable to penetrate to the radical truth that it is not nature but actually the machine—the camera—that produces the image as a result of optical-chemical processes it allows to take place, and it is the camera's technology-specific parameters that significantly determine the nature of the images that ultimately emerge, so he thus failed to grasp the logical consistency of the formulation "pencil of the machine."